



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,338	09/08/2003	Robert R. Rice	7784-000626	8818
27572	7590	11/23/2005	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			RAMIREZ, JOHN FERNANDO	
			ART UNIT	PAPER NUMBER
			3737	

DATE MAILED: 11/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

SP

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/657,338	RICE ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	John F. Ramirez	3737

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 08 September 2003.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-28 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 08 September 2003 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    - a) All
    - b) Some \*
    - c) None of:
      1. Certified copies of the priority documents have been received.
      2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
      3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)              |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/08/03-05/12/05</u> . | 6) <input type="checkbox"/> Other: _____.  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

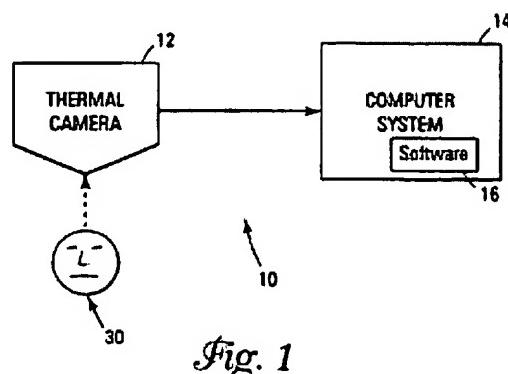
(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 4, 6-8, 10, 12, 13, 15, 17-19, 21 are rejected under 35

U.S.C. 102(b) as being anticipated by Pavlidis (US 6,854,879).



*Fig. 1*

With respect to claims 1, 2, 4, 6-8, and 10, Pavlidis discloses a system for detecting physiological stress in a subject, the system comprising: a processor (14, Figure 1) adapted to receive an image of the subject from a camera (12, Figure 1), adapted to identify a first spectral characteristic of the subject when the

subject is unstressed and adapted to identify a second spectral characteristic of the subject when stressed (col. 16, lines 35-40), the processor further adapted to compare an area of the image with the first and the second spectral characteristics and adapted to indicate whether the subject is experiencing physiological stress based on which of the spectral characteristics the image more closely coincides with (col. 15, lines 12-64), the second characteristic further comprising being coincident with one of a spectrum of sub-dermal blood flow and a spectrum of dermal hydration (col. 4, lines 46-67), whereby the second characteristic indicates a blush (col. 5, lines 5, 12), the processor coupled to the camera, (Figure 1), wherein the processor is coupled to a time source, a date source, and a location source to enable the processor to associate the time, date, and location with the image (col. 10, line 65 – col. 11, line 14; and see claims 23 and 27), wherein the system is installed in one of an airport, an interrogation room, and a store (col. 19, lines 40-46), wherein the processor identifies the first spectral characteristic from the image to detect an unstressed condition of the subject in real time, wherein the processor identifies the second spectral characteristic from the image to detect a stressed condition of the subject in real time (col. 10, line 65 – col. 11, line 14).

With respect to claims 12, 13, 15, 17-19, and 21, Pavlidis teaches all the structures as set forth above. The method concerning the steps of (1) detecting physiological stress of a subject, (2) observing an image of the subject with a system, the subject to include a first spectral characteristic when the subject is unstressed and a second spectral characteristic when the subject is stressed, (3)

comparing an area of the image to the first spectral characteristic with the system, (4) comparing the area of the image to the second spectral characteristic with the system (5) determining with the system which of the spectral characteristics the area of the image more closely coincides with to detect if the subject is experiencing stress, (6) selecting the second spectral characteristic from the group consisting of a spectrum of sub-dermal blood flow and a spectrum of dermal hydration and wherein the second spectral characteristic indicates a blush, (7) coupling a camera to the system whereby the camera inputs the image to the system, (8) associating a time, a date, and a location with the image (9) installing the system in one of an airport, an interrogation room, and a store, (10) identifying the first spectral characteristic from the image in real time, and (11) identifying the second spectral characteristic from the image in real time, would be inherently met by the disclosure.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 9, 11, 14, 20, 22-25, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pavlidis in view of Elli Angelopoulou (*The Reflectance Spectrum of Human Skin*).

Pavlidis, teaches all the limitations of the claimed subject matter except for mentioning specifically a system wherein the attenuation occurs near a frequency selected from the group consisting of about 542 nanometers, about 560 nanometers, about 576 nanometers, about 1400 nanometers, and about 1700 nanometers, wherein the processor is adapted to identify the first spectral characteristic from a back of the hand of the subject, wherein the processor identifies the second spectral characteristic from a palm of the hand of the subject, a processor further adapted to compare the first and the second areas of skin and adapted to indicate whether the subject is experiencing physiological stress based on an attenuation at a pre-selected frequency of a spectrum between the first and the second areas of skin, wherein the attenuation is representative of a change in one of a spectrum of sub-dermal blood flow and a spectrum of dermal hydration and wherein the attenuation indicates a blush.

However, the system wherein the attenuation occurs near a frequency selected from the group consisting of about 542 nanometers, about 560 nanometers, about 576 nanometers, about 1400 nanometers, and about 1700 nanometers, wherein the processor is adapted to identify the first spectral characteristic from a back of the hand of the subject, wherein the processor identifies the second spectral characteristic from a palm of the hand of the subject, a processor further adapted to compare the first and the second areas of skin and adapted to indicate whether the subject is experiencing physiological stress based on an attenuation at a pre-selected frequency of a spectrum between the first and the second areas of skin, wherein the attenuation is

representative of a change in one of a spectrum of sub-dermal blood flow and a spectrum of dermal hydration and wherein the attenuation indicates a blush are considered conventional in the art as evidenced by the teachings of Elli Angelopoulou (*The Reflectance Spectrum of Human Skin*).

Elli Angelopoulou discloses a system wherein the attenuation occurs near a frequency selected from the group consisting of about 542 nanometers, about 560 nanometers, about 576 nanometers, about 1400 nanometers, and about 1700 nanometers, wherein the processor is adapted to identify the first spectral characteristic from a back of the hand of the subject, wherein the processor identifies the second spectral characteristic from a palm of the hand of the subject, a processor further adapted to compare the first and the second areas of skin and adapted to indicate whether the subject is experiencing physiological stress based on an attenuation at a pre-selected frequency of a spectrum between the first and the second areas of skin, wherein the attenuation is representative of a change in one of a spectrum of sub-dermal blood flow and a spectrum of dermal hydration and wherein the attenuation indicates a blush.

Based on the above observations, for a person of ordinary skill in the art, modifying the system disclosed by Pavlidis, with the above discussed enhancements would have been considered obvious because such modifications would have improved the system to detect physiological stress in humans by providing more accurate data of the light reflected from the skin.

Claims 5 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pavlidis in view of Kataoka (*Development of a Skin Temperature Measuring System for Non-contact Stress Evaluation*).

Pavlidis, teaches all the limitations of the claimed subject matter except for mentioning specifically a system wherein the processor is coupled to an alarm and activates the alarm if the area of the image more closely coincides with the second spectral characteristic.

However, the system wherein the processor is coupled to an alarm and activates the alarm if the area of the image more closely coincides with the second spectral characteristic is considered conventional in the art as evidenced by the teachings of Kataoka.

Kataoka discloses a system wherein the processor is coupled to an alarm and activates the alarm if the area of the image more closely coincides with the second spectral characteristic.

Based on the above observations, for a person of ordinary skill in the art, modifying the system disclosed by Pavlidis, with the above discussed enhancements would have been considered obvious because such modifications would have improved the system to detect physiological levels of stress induced by an emergent condition providing more accurate data of skin temperature changes.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John F. Ramirez whose telephone number is (571) 272-8685. The examiner can normally be reached on (Mon-Fri) 7:30 - 4:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian L. Casler can be reached on (571) 272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JFR  
11/16/05



BRIAN L. CASLER  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3700